TVA

July 08, 2008

10 CFR 52.79

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

In the Matter of   )   Docket No. 52-014 and 52-015
Tennessee Valley Authority   )

BELLEFONTE COMBINED LICENSE APPLICATION – RESPONSE TO REQUEST FOR
ADDITIONAL INFORMATION – POPULATION PROJECTIONS

Reference: Letter from Joseph Sebrosky (NRC) to Andrea L. Sterdis (TVA), Request for
Additional Information Letter No. 034 Related to SRP Section 02.01.03 for the
Bellefonte Units 3 and 4 Combined License Application, dated June 9, 2008.

This letter provides the Tennessee Valley Authority's (TVA) response to the Nuclear Regulatory
Commission's (NRC) request for additional information (RAI) items included in the reference
letter.

A response to each NRC request in the subject letter is addressed in the enclosure which does not
identify any associated changes that will be made in a future revision of the BLN application.

If you should have any questions, please contact Phillip Ray at 1101 Market Street, LP5A,
Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-7030, or via email at
pmray@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on this 8ᵗʰ day of July , 2008.

Andrea L. Sterdis
Manager, New Nuclear Licensing and Industry Affairs
Nuclear Generation Development & Construction

Enclosure
  cc: See Page 2

cc: (Enclosures)
    J. P. Berger, EDF
    J. M. Sebrosky, NRC/HQ
    E.   Cummins, Westinghouse
    S. P. Frantz, Morgan Lewis
    M. W. Gettler, FP&L
    R .   Grumbir, NuStart
    P. S. Hastings, NuStart
    P.   Hinnenkamp, Entergy
    M. C. Kray, NuStart
    D.   Lindgren, Westinghouse
    G. D. Miller, PG&N
    M. C. Nolan, Duke Energy
    N. T. Simms, Duke Energy
    G. A. Zinke, NuStart

cc: (w/o Enclosure)
    B. C. Anderson, NRC/HQ
    M. M. Comar, NRC/HQ
    B.   Hughes/NRC/HQ
    R. G. Joshi, NRC/HQ
    R. H. Kitchen, PGN
    M. C. Kray, NuStart
    A. M. Monroe, SCE&G
    C. R. Pierce, SNC
    R.   Reister, DOE/PM
    L.   Reyes, NRC/RII
    T.   Simms, NRC/HQ

Enclosure
TVA letter dated July 08, 2008
RAI Responses

Responses to NRC Request for Additional Information letter No. 034 dated June 9, 2008

(3 pages, including this list)

Subject: Population Projections included in the Final Safety Analysis Report

RAI Number   Date of Response

02.01.03-1   This letter – see following pages

Attachments / Enclosures   Pages Included

None

Enclosure
TVA letter dated July 08, 2008
RAI Responses

NRC Letter Dated: April 10, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 02.01.03-01

Please provide the detailed methodology that TVA used for developing the population projections in the application. Please explain the basis for the time frame that TVA used for calculating the growth rate by county. Did TVA use this calculated growth rate by county on a linear basis for developing its population projections into future years? Please clarify the term 'growth ratio' and how it is used for determining population projections.

BLN RAI ID: 423

BLN RESPONSE:

The methodology used to develop the population projections in the BLN region is based on guidelines listed in NUREG-1555. This guideline was used to ensure consistency between the Environmental Report and the Final Safety Analysis Report. To project total population for the BLN Region three steps are combined, by geography, to form a series of tables. The three steps, described in detail below, are: 1) convert US Census block data to sector data geography, 2) convert county population projections to sector population projections, and 3) convert transient data to sector transient population data. The resultant data tables provide a projected population value for each sector for 2007, 2017, 2027, 2037, 2047, and 2057. These tables also illustrated in FSAR Tables 2.1-203, 2.1-204, and 2.1-208, correspond directly to distances and directions displayed in Figure 2.1-206 and Figure 2.1-207.

To convert 2000 US Census block data to sector data in ArcGIS, the sector grid is overlain onto the block data and the data are spatially integrated. US Census blocks that have been bisected by the sector grid are area weighted and summed in the appropriate sectors. The resulting data has a mathematically unrounded population value for each sector for the year 2000.

To convert county population projections to sector population projections, the county data were plotted in Excel and trend lines were fitted. The counties displayed a linear pattern and the linear trend lines correlated with the data well. Because the data was linear, least squares linear regression was used to estimate population projection values. The resulting equations are used in conjunction with the county 2000 Census data to produce a growth ratio or index for each year and county used. For any county with a negative growth rate, a ratio of one was used to produce the most conservative results without overestimating. The county indices are then area weighted by sector and summed for each sector producing a population growth index by sector for each year.

To convert the transient population data to sector transient data, locational data are first converted to points and polygons within ArcGIS. These points and polygons are integrated into the sector grid. Any polygon that is bisected by the sector grid is area weighted and summed into the appropriate sector. The resulting data is the mathematically unrounded transient sector population for the region.

The results of step one is multiplied by the resulting indices of step two. The result is a mathematically rounded permanent population value for each sector for each year. Next, the transient data from step three is multiplied by the indices of step two and mathematically

rounded. The result is a transient population value by sector for each year. Population tables are then generated for each sector and year of interest.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ATTACHMENTS/ENCLOSURES:

None